Amendments to the Claims

1. (Previously presented) A method of joining two silicon parts along respective joining areas, comprising the step:

providing a flowable mixture of a silicon powder and a silica bridging agent;

applying said flowable mixture to at least one of said joining areas;

assembling said two silicon parts with said respective joining areas in juxtaposition; and

annealing said assembled parts at an annealing temperature sufficient to convert said silica bridging agent to a silica network.

2. (Previously presented) The method of Claim 1, wherein said annealing temperature is at least 400°C.

3. (Previously presented) The method of Claim 2, wherein said annealing temperature is between 900°C and 1100°C.

4. (Previously presented) The method of Claim 2, wherein said annealing temperature is at least 1200°C.

5. (Previously presented) The method of Claim 4, wherein said annealing temperature is at least 1300°C.

6. (Previously presented) The method of Claim 1, wherein said silicon powder comprises virgin polysilicon.

7. (Previously presented) The method of Claim 1, wherein said silicon powder has a size of less than 100μm.

8. (Previously presented) The method of Claim 7, wherein said size is between 1 and 50μm.

9. (Previously presented) The method of Claim 1, wherein said silicon powder has a size distribution with a median size in a range of 10nm to 25nm.

10. (Previously presented) The method of Claim 1, wherein said silicon powder has a size distribution with at least 99% of particles having a size of less than 100nm.

11. (Previously presented) The method of Claim 1, wherein said silicon powder is formed by a CVD process creating particles of silicon.

12. (Previously presented) The method of Claim 1, wherein said silica bridging agent comprises a silicone-containing material.

13. (Previously presented) The method of Claim 1, wherein said silica bridging agent comprises a spin-on glass.

14. (Previously presented) The method of Claim 13, wherein said flowable mixture consists of said spin-on glass and said silicon powder.

15 (Previously presented) The method of Claim 14, wherein said silicon powder has a size distribution with at least 99% of particles having a size of less than 100nm.

16. (Previously presented) The method of Claim 13, wherein said flowable mixture further comprises a retardant to slow setting of said silica bridging agent at room temperature.

17. (Previously presented) The method of Claim 16, wherein said silica bridging agent comprises a spin-on glass and said retardant comprises an alcohol including less than 1% water.

18. (Previously presented) The method of Claim 1, wherein said parts form part of a wafer support fixture.

19. (Previously presented) A joined silicon assembly, comprising:

at least two silicon parts juxtaposed across respective pairs of joining areas separated by respective gaps; and

a composite bridging said gaps and comprising silicon crystallites having sizes of less than 100μm embedded in a matrix of silica.

20. (Previously presented) The assembly of Claim 19, wherein said crystallites have a size distribution with at least 99% of particles of size of less than 100nm.

21. (Previously presented) The assembly of Claim 19 configured as a support fixture for supporting a plurality of substrates in parallel orientations spaced along an axis of the fixture.

22. (Previously presented) A substrate support fixture, comprising:

a plurality of silicon legs including teeth for supporting a plurality of substrate in parallel orientations;

two silicon bases joined to opposing ends of said legs across respective joints with respective gaps between a respective one of said bases and a respective one of said legs;

silicon crystallites having sizes of less than 100μm occupying at least 50% of said gaps; and

a silica network in each of said gaps joining said silicon crystallites and said legs and said bases.

23. (Previously presented) The fixture of Claim 22, wherein said sizes are between 1 and 75μm.

24. (Previously presented) The fixture of Claim 22, wherein said silicon crystallites have

a size distribution with at least 99% of particles having a size of less than 100nm.

25. (Previously presented) The fixture of Claim 22, wherein said legs comprise an arcuate back side opposite said tips of said teeth supporting said substrates.

26. (Previously presented) A silicon support tower, comprising:

two silicon bases; and

at least three silicon legs joined to said bases, each comprising on a front side a plurality of teeth having support surfaces for supporting a plurality of substrates in parallel orientation and on a back side an arcuate surface about a median plane of said teeth matching arcuate surfaces formed in said bases.

27. (Previously presented) The tower of Claim 26, further comprising a silicon and silica composite joining said bases and said legs.

28 – 32. (Canceled)

33. (New) The method of Claim 1, wherein said two silicon parts are bonded together through the silica network after the annealing step.

34. (New) A method of joining two parts along respective joining areas, comprising:

providing a flowable mixture of a silicon powder and a glass forming agent;

applying the flowable mixture to at least one of the joining areas;

assembling said two silicon parts with said joining areas being opposed to each other; and

heating the assembled parts to an elevated temperature sufficient to convert the glass forming agent into a glass bonded to both of the joining areas.

35. (New) The method of claim 34, wherein the glass comprises a silicate glass.

36. (New) The method of claim 34, wherein the glass forming agent comprises a silica spin-on glass.

37. (New) The method of claim 34, wherein the silicon powder has a size distribution with at least 99% of the particles having a size of less than 100nm.